

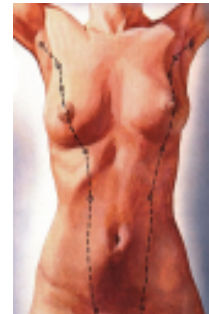


Breast disorders

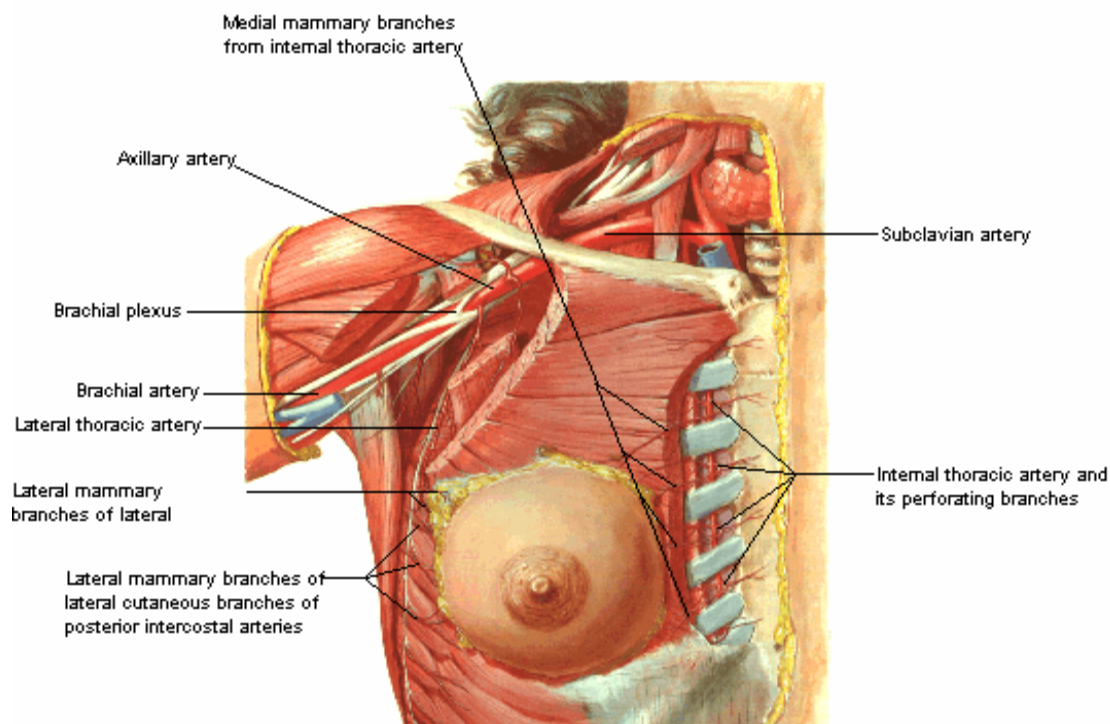
BREAST DISORDERS

EMBRIOLOGY

The Breast is a modified sweat gland which is developed from an **ectodermal ridge " mammary ridge "** which extends between the anterior pectoral fold & the groin. **Normally** it disappears all through except in the front of the chest where solid columns of epithelia pass deeply → **milk duct**



ANATOMY



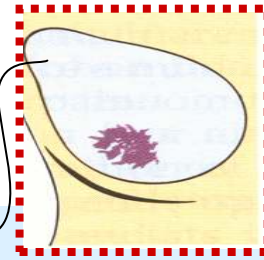
* Extent

- **Above** : at 2nd rib.
- **Below** : at 6th rib.
- **Medially** : at lateral border of sternum.
- **Laterally** : at anterior axillary line.

The actual extent of the breast is important for the surgeon who aims at removal of the whole breast for malignancy.

SO It actually extends:

- **Above** to the clavicle.
- **Below** to below the costal margin.
- **Medially** to the middle line.
- **Laterally** to the posterior axillary line.

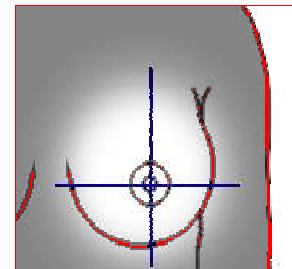


Axillary tail of Spence : (3rd rib)

It is a prolongation from upper outer part of gland up to axilla. It is considered the only part which is deep to pectoral fascia through **foramen of Langer**. so it drains directly into posterior axillary L.Ns

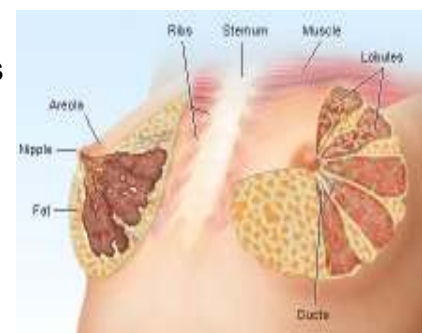
* **Areas** (6 areas)

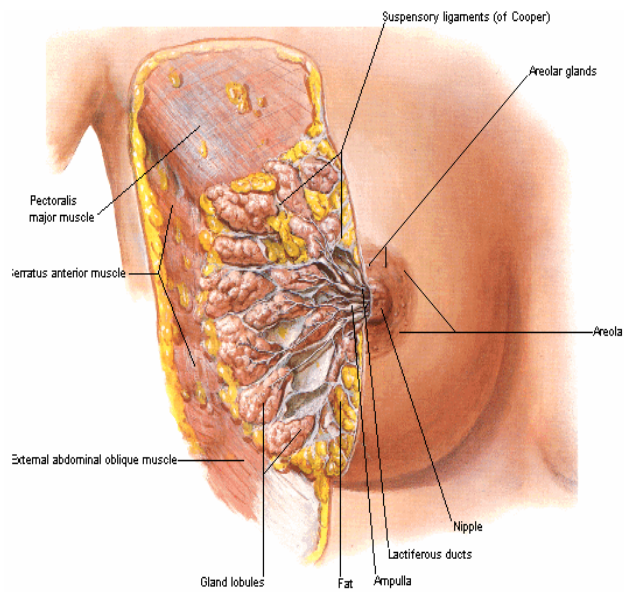
- Upper inner quadrant
- Upper outer quadrant
- Retro-areolar part
- Lower inner quadrant.
- Lower outer quadrant.
- Axillary tail.



* **Architecture**

- **Breast consists of (15 - 20) lobes** which are arranged in radiating manner & each is drained by a lactiferous duct. the ducts converge at the nipple. A lobe is made up of (20 - 40) **lobules**, each of which consists of (10 - 100) **alveoli**
- **The supporting tissues :**
 - The ducts are attached to underlying pectoral fascia by band of fibrous tissue to the skin called (**Cooper's ligament**). This ligament can be involved in fibrotic lesions leading to **skin dimpling**
 - The ducts are surrounded by **contractile myoepithelial cells** which are stimulated by oxytocin & move milk towards the nipple.
- **Nipple** : (4th intercostal space)
On its top **15 – 20 opening**, its normal direction is downward, forward & laterally
- **Areola** :
Thick skin, pink in nulipara, blackens brown with pregnancy. contains sweat & sebaceous glands of **montgomery**.





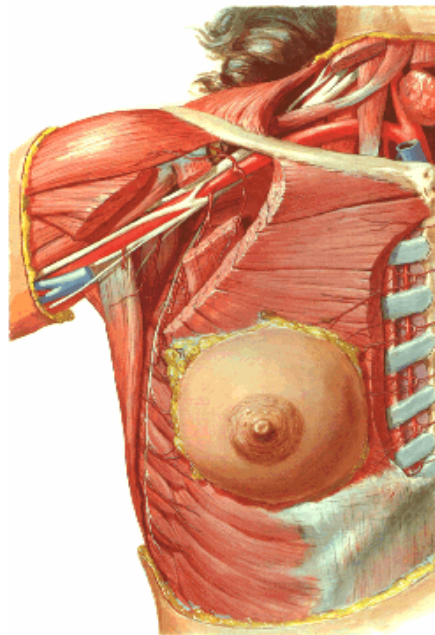
* Muscle floor

It lies on **3 muscles**

- Pectoralis major muscle.
- Serratus anterior muscle
- External oblique muscle

* Arterial supply

- Axillary artery → lat. thoracic artery
- Internal mammary artery → 2,3,4 perforators.
- Intercostal perforators.



* Venous drainage

- Axillary vein
- Internal mammary vein
- Intercostal veins

(which drain into Azygos system which communicates with valveless vertebral veins)

This explains early vertebral metastasis with cancer breast

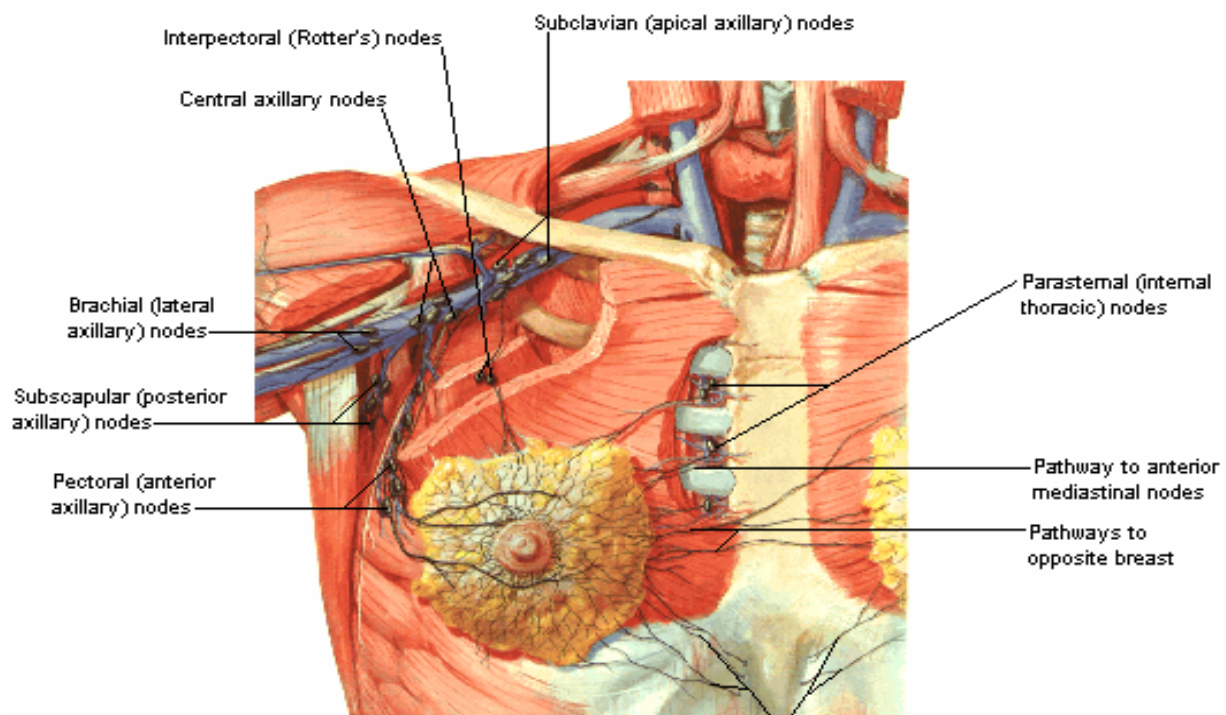
* Lymphatic drainage

♦ Classic description

1. **Sub-areolar plexus of sappey :**
from nipple & areola then drains to deep plexus.
2. **Deep plexus** (over pectoralis)
from sub-areolar plexus & deep part of the gland then drain to axillary L.Ns & Internal mammary through the pectoralis muscles.

♦ Modern description

Lymphatics drain through axillary L.Ns & Internal mammary L.Ns



I. Axillary L.Ns

These nodes receive about 75 % of breast lymph. There are on average 35 lymph nodes in the axilla that are arranged into :

1. THE ANTERIOR (PECTORAL) GROUP

- **SITE** : under cover the pectoralis major along the lateral thoracic vessels at the lower border of the pectoralis.
- **DRAINS** :
 - chest wall.
 - whole breast except tail.
 - ant. abdominal wall above umbilicus.

2. THE POSTERIOR (SUB-SCAPULAR) GROUP

- **SITE** : along the subscapular vessels.
- **DRAINS** :
 - axillary tail.
 - post. abdominal wall above umbilicus

3. **THE LATERAL (HUMERAL) GROUP**

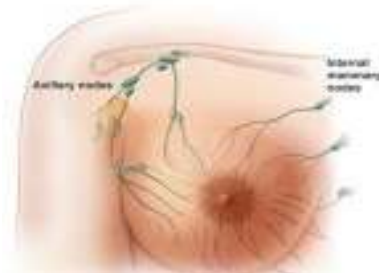
- **SITE** : along the axillary vein (upper part of humerus).
- **DRAINS** : all the upper limb.

4. **THE MEDIAL (CENTRAL) GROUP**

- **SITE** : central part of axilla (embedded in the axillary fat).
- **DRAINS** : {1},{2},{3}

5. **THE APICAL GROUP**

- **SITE** : extreme apex of axilla.
- **DRAINS** : {1},{2},{3},{4}



II. **Other associated L.Ns**

1. **Internal Mammary L.Ns**

They receive part of the lymph from the medial half of the breast

2. **Inter-pectoral L.Ns of Rotter** between 2 pectoral muscles

3. **Posterior intercostals L.Ns** along neck of ribs & have a minor share

III. **Further lymphatic spread**

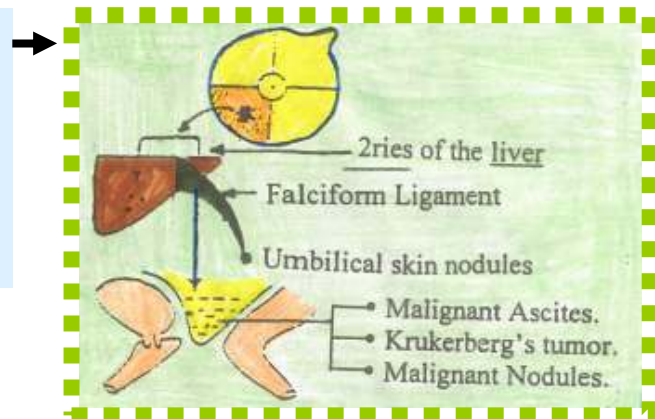
Connection of the lymphatics of the lower inner quadrant of the breast with the peritoneum. Lymphatics pierce rectus sheath → spread to liver leading to liver nodules. then through (Falciform ligament) → umbilical nodules (**Josef sister's nodules**)

N.B.: Some malignant cells will lead to

Malignant ascites,

Krukenberg's tumor

& Malignant nodules
in the douglas pouch.



From prognostic point view axillary L.Ns are classified by ➤

Pectoralis minor muscle into **3 levels**

- Level I → L.Ns below the muscle
- Level II → L.Ns behind the muscle
- Level III → L.Ns above the muscle

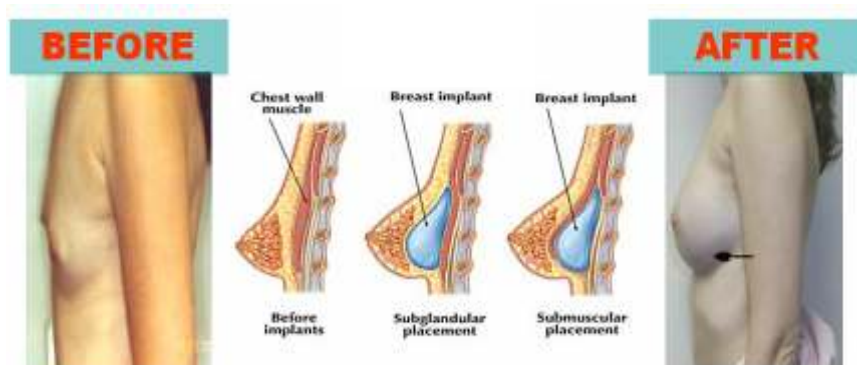
The prognostic importance

with treatment of cancer breast with adjuvant therapy

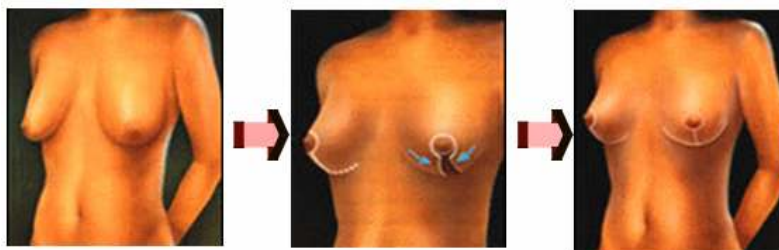
I- CONGENITAL ANOMALIES

1. The Breast

1. **Amazia** :
absence of breast (unilateral or bilateral)
2. **Polymazia** :
accessory breast along mammary ridge
they may function during lactation
3. **Micromazia** : small breast.
treated by **augmentation** mammoplasty



4. **Diffuse hypertrophy** of the breast
treated by **reduction** mammoplasty

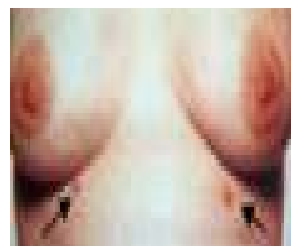


5. Infantile gynaecomastia :

Diffuse enlargement of the male breast which may be unilateral or bilateral. It is caused by the effect of circulating maternal sex hormones. The condition is usually **reversible within 6 months**, and therefore, requires **no** treatment

2. The Nipple

1. **Athelia** :
absence of nipple (very rare).
2. **Polythelia** :
accessory nipple along mammary ridge
an accessory nipple may be mistaken for a mole or a wart.



3. Congenital retraction of the nipple :

- It must be differentiated from acquired retraction

	Congenital retraction	Acquired retraction
• History	dating since birth .	recent.
• Side	bilateral > 3/4 of cases	unilateral .
• Mass	no breast mass	presence of breast mass
• Sulcus	absent	present

Don't Forget

[Causes of acquired nipple retraction]
due to "**excessive fibrosis**"

1. Mammary duct ectazia.
2. Chronic breast abscess.
3. Carcinoma of the breast.



II- TRAUMATIC DISEASES

(very rare)

usually follow a **blunt** trauma

1. Traumatic fat necrosis

- **Trauma** → death of some fat cells → liberation of fatty acids which combine with calcium from local tissue fluid → **calcium soaps**

N.B : Other causes of traumatic fat necrosis :

- **direct** trauma e.g. needle biopsy
- or • **indirect** trauma e.g. sudden contraction of pectoralis.

- **Calcium soaps :**

- **cyst** containing " thick oily fluid "
- **hard** mass If we do biopsy the cut section will show "characteristic chalky white appearance".

- **Treatment** : Excision & biopsy.

2. Breast hematoma

- **Trauma** → blood clot → organization → **fibrosis**
- **Fibrosis** → **hard** mass.
- **Treatment** : Excision & biopsy.

III- INFLAMMATORY DISEASES

A- Acute inflammatory mastitis

1- Acute lactational mastitis & Acute breast abscess



Mastitis from milk engorgement

- ★ **Incidence** : 1st month of 1st lactation.
- ★ **Aetiology** : due to obstruction of duct by dry inspissated milk or epithelial debris.
- ★ **Clinical picture** :
 - **Symptoms** :
 - **General** : Toxic symptoms [**F**ever, **H**eadache, **M**alaise & **A**norexia]
N.B : Fever is due to absorption of Milk protein (Ag x Ab)
 - **Local** : dull aching pain.
 - **Signs** :
 - **Diffuse** tense & tender.
 - **No** physical signs of inflammation i.e. no hotness or redness.
 - **No** axillary L.Ns.
- ★ **Fate** :
[If neglected] → acute bacterial mastitis or acute breast abscess.

Acute bacterial mastitis

- ★ **Incidence** : 1st month of 1st lactation i.e. fate from milk engorgement.
or when baby is at 6 months i.e. development of incisors.
- ★ **Aetiology** :
 - **Predisposing factors** :
 - mastitis from milk engorgement.
 - abrasions of nipple e.g. cracks or fissures.
 - lack of breast hygiene.
 - **Organism** : Staphylococcus aureus (gram +ve).
 - **Route of entry** : organism from baby's mouth.
much less common (blood born infection).
- ★ **Clinical picture** :
 - **Symptoms** :
 - **General** : toxic symptoms [**F**ever, **H**eadache, **M**alaise & **A**norexia]
N.B : Fever is due to absorption of Organism (Ag x Ab)
 - **Local** : dull aching pain but gets worse.
 - **Signs** :

- **Diffuse** tense & tender.
- **Physical signs** of inflammation, e.g. hotness or redness of skin.
- **Axillary L.Ns** : firm & tender (non specific).

★ **Fate** :

[If neglected] → acute breast abscess

Acute breast abscess

★ **Pathology** : milk engorgement + staph. infection → **pus**

★ **Clinical picture** :

➤ **Symptoms** :

- **General** : toxic symptoms [**Fever**, **Headache**, **Malaise** & **Anorexia**]

N.B. : Fever is hectic

i.e. fluctuant & does not reach the basal line at the same day

- **Local** : **throbbing** pain which is more at night

➤ **Signs** :

- **localized** tense & tender.
- **physical signs** of inflammation.
e.g. hotness or redness of skin.
- **axillary L.Ns** : firm & tender (non specific).
- **purulent** discharge
- **pitting oedema** of skin overlying the abscess.
- **fluctuation** is very late.



Acute bacterial mastitis



Mastitis carcinomatosa



History	<ul style="list-style-type: none"> • Onset, course & duration • Fever 	<ul style="list-style-type: none"> - acute onset & rapidly progressive course. - high grade fever. 	<ul style="list-style-type: none"> - gradual onset & slowly progressive course. - low grade fever
Inspection	<ul style="list-style-type: none"> • Skin over 	<ul style="list-style-type: none"> - fiery red. 	<ul style="list-style-type: none"> - dusky red.
Palpation	<ul style="list-style-type: none"> • Tenderness • Axillary L.Ns 	<ul style="list-style-type: none"> - markedly tenderness. - firm & tender. 	<ul style="list-style-type: none"> - mild tenderness. - hard & not tender
Treatment	<ul style="list-style-type: none"> • A.B 	<ul style="list-style-type: none"> - cured 	<ul style="list-style-type: none"> - no response

TREATMENT OF ACUTE LACTATIONAL MASTITIS & ACUTE BREAST ABSCESS

A- Prophylactic treatment

- (1) Correct hygiene of breast during lactation.
- (2) Paint the nipple with topical soothing creams.
- (3) The breast should be evacuated completely with each lactation.



B- Active treatment

I. STAGE OF MILK ENGORGEMENT & ACUTE BACTERIAL MASTITIS

i.e. before suppuration [*no abscess*]

1. Local heat "hot application".
2. Support of the breast helps to lessen pain
3. An antibiotic against staphylococci e.g. **Flucloxacillin** or **Cephalosporin**.
4. The Advisability of weaning:
 - If baby > 9M → **stop** feeding, the agent in common use is "**Parlodel**" 2.5 mg twice/day.
 - If baby < 9M → **continue** feeding with healthy breast & regular evacuation of diseased one by using a **pump**



II. STAGE OF ACUTE ABSCESS FORMATION

i.e. after suppuration [*don't wait for fluctuation*]

- **Anaesthesia** : general anesthesia.
- **Incision** :

N.B : Incision & drainage according to type of abscess :



- (1) **Supra (pre) mammary abscess** : incision any where.
- (2) **Intra-mammary abscess** : it may be
 - a. **Radial**: radiating from areolar
 - b. **Circum-areolar** : at margin of areola. 1st then radial incision is done so better cosmetic.
- (3) **Retro (post) mammary abscess** : incision in sub-mammary fold.



➤ **Technique** :

- 1- surgeon's finger breaks all loculi to form single cavity
- 2 - pus evacuation for culture & sensitivity.
- 3 - drain is brought out through the most dependent part.



2- Acute non lactational mastitis

The commonest type of non Lactational mastitis is that which complicates mammary duct ectasia

3- Rare types of mastitis

1. **Infected haematoma.**

2. **Infected tumors.**

3. **Mastitis neonatorum (female & male).** →

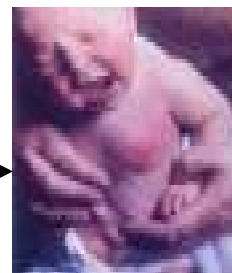
- It is due to retention of mother hormones i.e. (maternal prolactine) stimulates lactation in infant.

- **C/P** : swollen breasts on 3rd, 4th day with few drops of milk (**witch's milk**)

- It subsides within 2-3 weeks.

4. **Mastitis of puberty (male only)** →

- The condition affects adolescent boys → pain + swelling of breast. which becomes indurated but (suppuration **never** occur).



B- Chronic inflammatory diseases

1- Mammary Duct Ectazia

[**Plasma cell mastitis**]

Definition

Dilatation of major ducts of the breast.

Aetiology

Unknown.

Pathology

Chronic inflammation of duct system leads to dilatation of major ducts which are • Filled by : **Creamy secretions**.

(atrophic epithelium + fatty material).

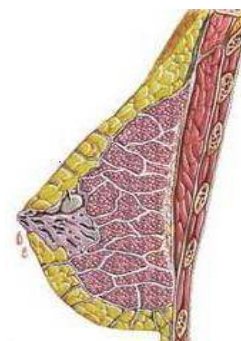
- Surrounded by : Plasma cells
so (called **Plasma cell mastitis**).

Clinical Picture

- **Age** : around or after menopause.
- **Mass** : **hard** mass, may be associated with nipple retraction, peau d 'orange .. etc
So similar to cancer breast.
- **Discharge** : **Green paste discharge**.

Treatment

Excision & biopsy (to exclude malignancy).



2- Chronic Breast Abscess

Non specific (Chronic Pyogenic Breast Abscess)

★ **Definition :**

fate of improper treatment of acute abscess.

★ **Aetiology :**

prolonged use of antibiotics → killing of bacteria
→ sterile pus → **Antibioma**

★ **Pathology :**

- **cavity** : containing sterile pus
- **wall** : thick fibrous wall.

★ **Clinical picture :**

- **Mass** : **hard** mass, may be associated with nipple retraction, peau d 'orange .. etc
So similar to cancer breast.
- **Discharge**: no discharge.

★ **D.D :**

	Chronic abscess	Cancer breast
• Toxaemia.	- Low grade fever.	- Absent
• Post-surface.	- Rounded.	- Flat.
• History of A.B	- + ve	- - ve
• Paget's test	- may + ve	- - ve

★ **Treatment :**

Excision & biopsy (to exclude malignancy).

Specific (T.B)

★ **Definition :**

a rare disease with active pulmonary **T.B**

★ **Aetiology :**

Tubercle bacilli (**T.B**)

★ **Pathology :**

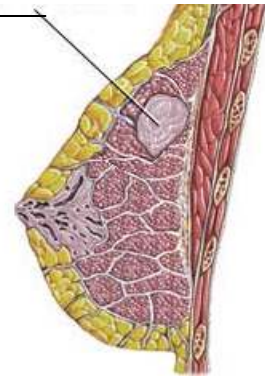
T.B. granuloma.

★ **Clinical picture :**

- **History** of (night sweat, night fever, loss of weight & loss of appetite).
- **Mass** : multiple nodules of the breast.
- **Axillary L.Ns** : enlarged & matted.

★ **Treatment :**

Anti T.B. drugs + Excision for resistant cases.

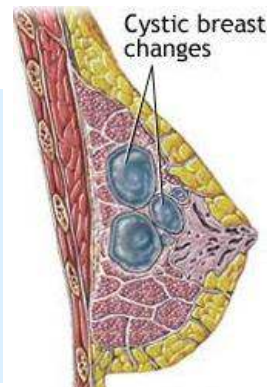


IV. FIBROCYSTIC DISEASE OF THE BREAST

FIBROADENOSIS

(Other names)

- Mammary dysplasia.
- Mastopathy.
- Chronic interstitial mastitis
- **ANDI** [**A**bserration of **N**ormal **D**evelopment & **I**nvolution]



Incidence

This is the most frequent disorder of the breast. the upper outer quadrant of the breast is the commonest site of affection.

Aetiology

[**Unknown**] but may be due to oversensitivity of oestrogenic receptors.
i.e. [**Relative hyperoestrogenaemia**]

Pathology

[**An image of pathological action of oestrogen on breast**]

★ N/E picture :

- **Site** : localized or diffuse.
- **Side** : unilateral or bilateral

★ Microscopic picture : [**Panplasia**]

- **Adenosis** : ↑ number of acini.
- **Epitheliosis** :
Hyperplasia of epithelial lining the ducts
→ Atypical hyperplasia → Pre-cancerous.

N.B: Duct papilloma

It is a localized form of epitheliosis

- **Fibrosis** : Fibrous tissue replaces the fat
i.e. Sclerosing adenosis

N.B: Fibroadenoma

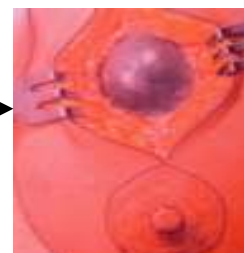
It is a localized form of adenosis& fibrosis

• Cyst formation :

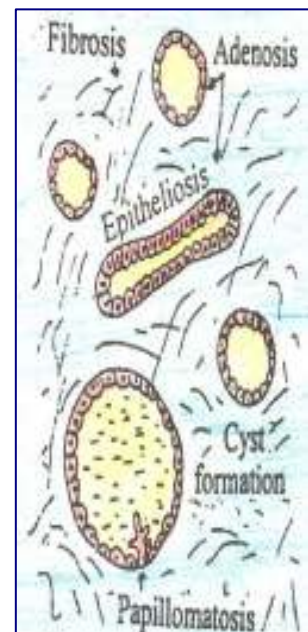
(A) **Microcyst** : degenerating cyst.

(B) **Macrocyt** : retention cyst →
due to obstruction by :

- **Epitheliosis** from inside.
- **Fibrosis** from outside.



Sometimes **papillomatosis** are seen in the cyst from excess epithelial proliferation



Clinical picture

★ Age :

after puberty or before menopause

★ Symptoms :

- **Pain** : dull ache. ↑ before, ↓ after menses.

N.B.: This pain stops with pregnancy

- **Discharge** : serous, dark, brown or green.
- **Mass** : painful & fixed to breast tissue.

★ Signs :

Breast

- **Tender** & firm or fine nodules by **tips** of fingers
- **Discharge** : by patient herself.
- **Mass** : away from the areola.



Axillary L.Ns

Firm & tender [never hard]

N.B.: L.Ns enlargement due to chemical irritation by abnormal hypersecretions from hyperplastic epithelium

Investigations [The Aim is to exclude cancer]

- U/S & soft tissue mammography
- Aspiration & cytology. →
- Biopsy & histopathology.



Treatment

(A) MEDICAL TREATMENT (The main ttt)

- Reassurance of the patient
- Advice patient to stop caffeine e.g. stop coffee, tea & chocolate
- Sedatives & tranquilizers.
- Support the breast by tight braces to ↓ pain
- **Parlodel (anti-prolactin)** : 2.5 mg twice per/day.
- **Danazol (synthetic androgen)** : 100 mg twice per/day.
- **Tamoxifen (anti-estrogen)** : 10 mg once daily.

(B) SURGICAL TREATMENT

Excision & biopsy
indicated with localized mass. →



(C) FOLLOW UP with atypical hyperplasia (monthly self examination)

V. BREAST NEOPLASM

A. BENIGN

- **Epithelial** : **Duct papilloma**.
- **Mixed** : (Epithelial & Fibrous Tissue) **Fibroadenoma**.

B. MALIGNANT

A. BENIGN NEOPLASM

1- DUCT PAPILLOMA

Incidence

Common at 30- 40 years.

Aetiology

- [**Benign tumor of epithelial cells**] It may be
- from the start i.e. de novo.
 - or on top of excessive localization of **epitheliosis** of fibroadenosis.

Pathology

- **N/E Picture** : usually single & arises from main lactiferous duct near the nipple
- **Microscopic picture** : core of very **vascular C.T** covered by hyperplastic epithelial layer.

Clinical picture

- **Age** : 30 - 40 years.
- **Symptoms** : - **Bleeding** per nipple
- **Retro-areolar** mass i.e. retention cyst
- **Signs** : - Retro-areolar mass
- Localize the duct by palpation of each quadrant

Complications

- Malignant transformation i.e. **duct carcinoma**.
- Profuse **bleeding** per nipple.

Investigation

DUCTOGRAPHY

Retro-areolar filling defect in major duct.

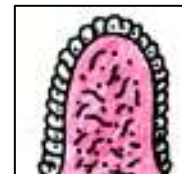
Treatment

MICRODOCHECTOMY

Excision of the affected duct through circum-areolar incision

- If there is a lump, the excision is easy.
- If there is **no** lump, the duct is identified by inserting a blunt tipped needle

The excised specimen should be histologically examined



2- FIBROADENOMA

Incidence

Commonest breast mass of young female.

Aetiology

[Benign tumor of epithelial cells + fibrous tissue] It may be

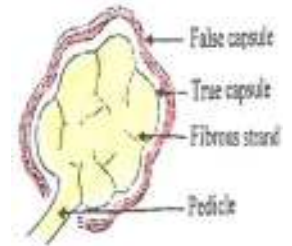
- from the start i.e. de novo.
- or on top of excessive localization of **adenosis** & **fibrosis** of fibroadenosis.



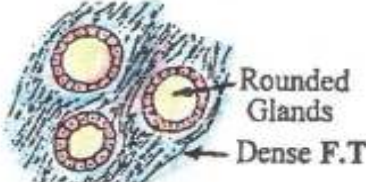

Pathology

■ The tumor is (well capsulated)

- **True capsule** : showing fibrous bands dividing it into lobules
- **False capsule** : formed by compressed breast tissue.

■ There are 2 types :



	Hard fibroadenoma (Peri-canalicular)	Soft fibroadenoma (Intra-canalicular)
• N/E Picture	attached to its capsule by one pedicle. 	attached to its capsule by multiple pedicles. 
• Microscopic Picture	ducts are surrounded by fibrous tissue 	ducts are compressed by fibrous tissue 

Clinical Picture

• Age	20 - 30 years	30 - 40 years
• Symptoms	<ul style="list-style-type: none"> • painless mass. • slow rate of growth i.e. malignancy is rare. 	<ul style="list-style-type: none"> • painless mass. • rapid rate of growth i.e. malignancy is common
• Signs	<ul style="list-style-type: none"> • firm to hard & not tender. • well defined edge. • mobile (breast mouse) • no L.Ns enlargement 	<ul style="list-style-type: none"> • soft & not tender.

Complication

• Malignancy	• never	• commonly → sarcoma
--------------	----------------	-----------------------------

N.B: Cystasarcoma phylloides :

➤ The name :

- The term cystasarcoma, however, is a misnomer as many are **not** cystic & it is **not** sarcoma.
- It better termed " **Phylloides tumor** "
- It was so named by " **Brodie** " who was used the term **Phylloides** because the cut surface resembles a leaf or a fan



➤ Pathology :

- It is highly cellular type of fibroadenoma that tends to grow rapidly

➤ Examination :

- It is giant soft fibroadenoma.
- Ulcerate through skin but not attached to it
- No axillary L.Ns except if infected.



➤ Treatment :

Wide local excision or Simple mastectomy

Investigations

Soft tissue mammography

Treatment

- **Hard** fibroadenoma : Excision & biopsy.
- **Soft** fibroadenoma :
 - If small : Excision & biopsy
 - If large : Simple mastectomy

B. CARCINOMA OF THE BREAST

1- Incidence

35% of total malignancies of **Egyptian**  **females.**

2- Risk Factors

A - GENETIC FACTORS

- Accounts for **5 – 10 %** of all breast cancer.
- Presence of breast cancer in a mother or sister **↑** risk **3** times.
While presence of cancer in both mother & sister **↑** risk **14** times.
- **2 Genes are associated:**
 1. **BRCA I** ; long arm of chromosome **17** associated with breast, ovarian & colon cancer
 2. **BRCA II** ; long arm of chromosome **13** associated with breast & ovarian cancer

B - ENDOCRINAL FACTORS

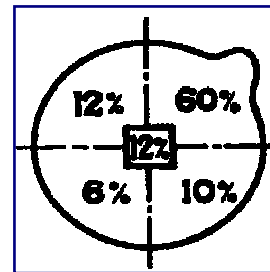
- **Early** menarche < 13 years.
- **Delayed** menopause > 50 years.
- Female get **1st pregnant** > 30 years.
- The relations to **oral contraceptive pills** is not known exactly.
- **Obesity** as adipose tissue converts steroid hormones to estradiol.
- Female with cancer to **one breast**.

C - PRECANCEROUS LESIONS

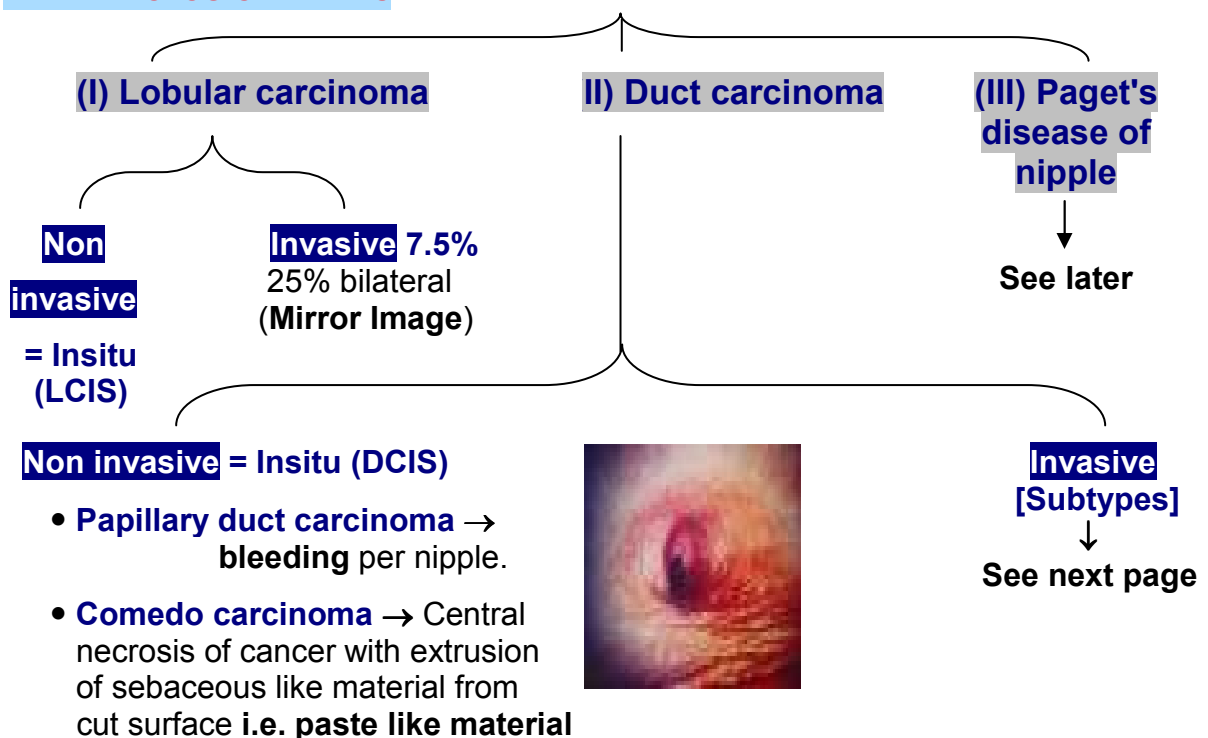
- Relations to **duct papilloma** ↑ risk 1.5 - 2 times.
- Relations to **atypical hyperplasia** of fibroadenosis ↑ risk 2 - 5 times.
- Relations to **lobular carcinoma in situ (LCIS)** or **duct carcinoma in situ (DCIS)** ↑ risk 5 - 10 times.

3- Pathology

- A - SITE**
- Upper outer (60%) The commonest
 - Lower outer (10%)
 - Upper inner (12 %)
 - Retroarolar (12%)
 - Lowe inner (6%) The rarest & worst → spread to sub-diaphragmatic lymphatics



B - PATHOLOGICAL TYPES



Invasive Duct Carcinoma

	1. ScirrhouS Ca (75%) ScirrhouS = Hard	2. Atrophic scirrhouS Atrophic = old female
• N/E picture	<ul style="list-style-type: none"> small, hard & irregular mass. C.S: → Gritty, concave, pale & non capsulated 	<ul style="list-style-type: none"> growth very slow. spread very late.
• Microscopic picture	<ul style="list-style-type: none"> fibrous tissue is more than malignant cells which is undifferentiated hence the name NOS (Not Otherwise Specified) areas of Hge & necrosis. 	<ul style="list-style-type: none"> fibrous tissue is the main constituent with minimal malignant cells. areas of Hge & necrosis.
• Prognosis	good if early diagnosed	very good because of slow growth & late spread

	3. Encephaloid Ca. 10% = Brain like	4. Mucinous Ca. 3% = Colloidal Ca.	5. Inflammatory Ca. v. rare = Mastitis carcinomatos
• N/E picture	<ul style="list-style-type: none"> large, soft & irregular mass. C.S: → soft, convex or bulging & non capsulated 	<ul style="list-style-type: none"> soft, gelly like material usually bulky 	<ul style="list-style-type: none"> large, soft mass. very rapidly growing tumor.
• Microscopic picture	<ul style="list-style-type: none"> malignant cells more than fibrous tissue areas of Hge & necrosis. lymphocytic infiltration 	<ul style="list-style-type: none"> spheroidal cells, distended with mucoid material. Signet ring like. 	N.B.: <ol style="list-style-type: none"> D.D.: From Acute mastitis occurs during pregnancy & lactation.
• Prognosis	better than scirrhouS because of lymphocytic infiltration	the best prognosis.	the worst prognosis.

N.B

HORMONAL RECEPTORS

- About **60%** of breast cancers have receptor for estrogen & termed **ER +ve**
- These tumors are hormone dependant & respond to hormonal treatment.

III. Paget's disease of the nipple

Incidence

1% with female > 40 years.

Definition

Malignant eczema of nipple & areola followed by duct carcinoma after 2 years.

Aetiology

Malignant erosion caused by duct carcinoma

Pathology

➤ **N/E picture** : [Malignant eczema]

unilateral with well defined margin.

➤ **Microscopic picture** :

1. Round cell Infiltration [**dermis**].
2. Hyperplasia [**all epidermis**].
3. **Paget's cells** [**deep epidermis**]
clear vacuolated cells with small
dark stained nuclei ➤



Ulcerative Type



Eczematous Type

Clinical Picture

2 Types may be present

(1) Ulcerative Type.

(2) Eczematous Type.



D.D.

Paget's disease (Malignant eczema)	Dermatitis (Ordinary eczema)
<ul style="list-style-type: none"> • Old female. • Unilateral. • Erosion. • No (Itching & oozing). • Start in the nipple. • Breast lump may be felt. • Not respond to eczema treatment. 	<ul style="list-style-type: none"> • Young female. • Bilateral. • No erosion. • Itching & oozing. • Start in the areola. • No lump. • Respond to eczema treatment.

Staging

Paget's disease **alone** = (**stage I**)

Treatment

Radical mastectomy

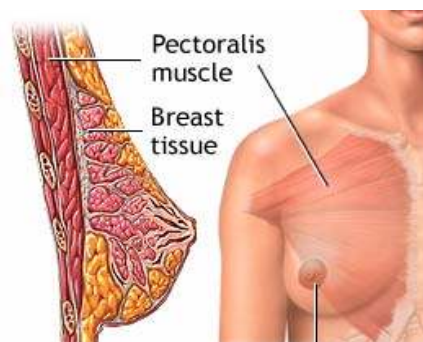
N.B.: Paget's disease is **radio-resistant**.

Prognosis

Paget's disease **alone** = **good** prognosis

4- Spread

1. **Direct** : [skin, underlying muscle & chest wall].
2. **Blood** : [Liver, Bone, Lung & Brain].
3. **Lymphatic** :
[by **Embolization & Permeation**].
➤ through axillary L.Ns →
internal mammary L.Ns →
supra-clavicular L.Ns.

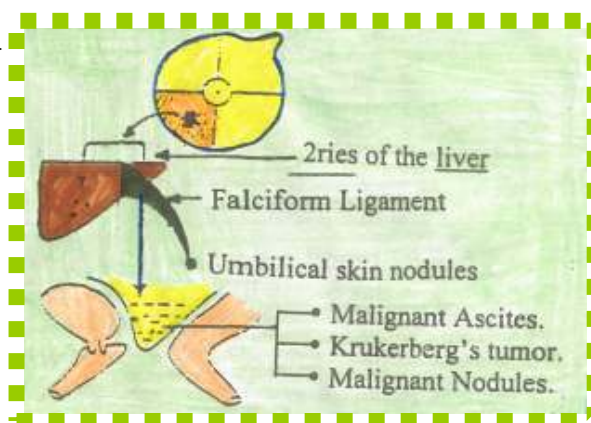


★ DON'T FORGET

Connection of the lymphatics of the lower inner quadrant of the breast with the peritoneum. Lymphatics pierce rectus sheath → spread to liver leading to liver nodules. then through (Falciform ligament) → umbilical nodules (**Josef sister's nodules**)

N.B.: Some malignant cells will lead to

**Malignant ascites,
Krukenberg's tumor
& Malignant nodules
in the douglas pouch.**



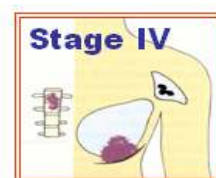
5. Staging

[1] T.N.M Staging

T = Tumor	N = Nodes	M = Metastasis
Tis = Ca in situ T0 = No evidence of 1ry tumor. T1 = < 2 cm. T2 = 2- 5 cm T3 = > 5 cm T4 = Any size with direct extension to chest wall or inflammatory carcinomatosia	N0 = No palpable L.Ns. N1 = Mobile axillary L.Ns. N2 = Fixed axillary L.Ns. N3 = Palpable homolateral supra-clavicular L.Ns.	M0 = No distant metastasis M1 = Distant metastasis

[II] Manchester Classification

	Tumor	L.Ns	Metastasis
Stage I	• Mobile breast mass.	• NO	• NO
Stage II	• Mobile breast mass.	• Mobile (at same side).	• NO
Stage III	• Skin involvement. • Pectoralis muscles are involved. • No Chest wall involvement.	• Fixed (at same side). • + supraclavicular L.Ns	• NO
Stage IV	• Skin involved e.g. cancer en cuirasse • Pectoralis muscles are involved. • Chest wall is involved	• Involved at opposite side of axilla.	• Metastasis mainly Bone



Stage I & II = Operable & Stage III & IV = Inoperable

6- Clinical picture

★ **Age :**

commonly at **40 - 60** years + **risk factors** (*discuss*).

★ **Symptoms :**

[A] **General symptoms**

(may be the 1st presentation) i.e. **occult** carcinoma.

- **Lung:** chest pain, cough, dyspnea & haemoptsis.
- **Bone :** mass in skull, backache & pathological fracture.
- **Liver:** pain at Rt. hypochondrium & Jaundice.
- **Brain :** extremely rare.

[B] **Local symptoms**

- **Hard**, painless mass, **discovered accidentally**.
- **Rapid rate** of growth.
- **Discharge :**
 1. **Blood** If duct carcinoma.
 2. **Necrotic crystals** If degenerating carcinoma

➤ **Signs :**

[A] **General signs**

- To detect Metastasis (Liver, Bone, PR, PV & ... etc).

[B] **Local signs**

(1) **Mass :**

- **Hard** not tender mass.
- **Circumscribed** edge (hard mass inside soft breast).
- **Flat** under surface (local spread Ant. > Post.).
- **Fixed** to skin & +/- chest wall.

(2) **L.Ns :**

[Hard, enlarged, 1st mobile later on fixed]

(3) **Breast :**

SKIN MANIFESTATIONS

1. **Dimpling & puckering :**

- due to contracture of **Cooper's** ligaments.

2. **Nipple retraction & deviation :**

- due to excessive fibrosis [**not pathognomonic**]

3. **Peau d'orange : [Pitting oedema]**

- due to obliteration & compression of lymphatic by excessive fibrosis [**not pathognomonic**]



4. **Cancerous skin nodules :**

- due to lymphatic spread. It may be near or far from tumor e.g. around umbilicus.

5. **Cancer en cuirasse : [Advanced stage]**

- It means hard, thick skin, metallic brown & stretched as [**War-shield**]

6. **Ulceration & fungation :**

- Raised everted edge with necrotic floor.

7. **Paget's disease of nipple (see before)**

8. **Mastitis carcinomatosa (see before)**

9. **Dilated veins over the skin of the breast.**



7- Differential diagnosis

1. **D.D. from nipple retraction**
 - **Carcinoma.**
 - **Duct ectazia.**
[history of **green** paste discharge].
 - **Chronic breast abscess**
[history of acute abscess & A.B intake].
2. **DD. from bloody discharge**
 - **Duct carcinoma**
 - **Duct papilloma**
3. **D.D from hard mass**
 - **Carcinoma.**
 - **Duct ectazia.**
[history of **green** paste discharge].
 - **Chronic breast abscess**
[history of acute abscess & A.B intake].
 - **Traumatic** [history of trauma].
 - **Hard fibroadenoma** [breast mouse].



8- Investigations

A. Soft tissue mammography

- Cancer appears as a **dense** opacity.

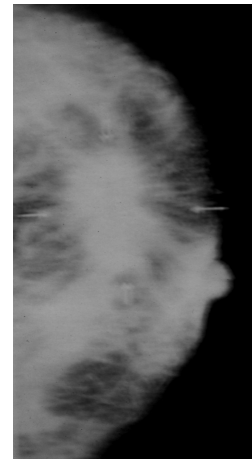
N.B. : Mammography is of less value
with young female (< 18 years)
because of similarity of lesion
to the dense breast

• Indications :

1. Screening for **high** risk group.
2. Search for **occult** cancer in female with metastatic disease.
3. Evaluate **non** palpable breast lump.
4. Evaluate **opposite** breast with cancer in the other breast.

• Mammagraphic findings suggestive of malignancy :

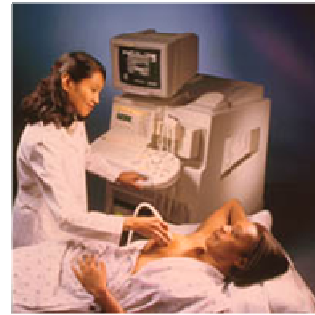
1. Microcalcification (**Stipling sign**)
2. Irregular outlines from irregular **spicules** penetrate surrounding breast.
3. Increase **vascularity** of the breast.
4. Nipple **retraction**.



B. Ultrasonography

Both U/S & Mammography are complementary to each other.

- It can differentiate solid from cystic mass.
- It is useful in young women .

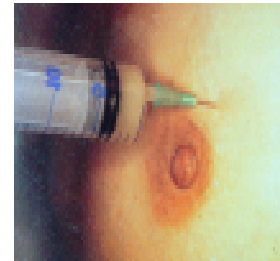


C. Diagnostic procedures (Biopsy)

- **Excision biopsy** : (The most reliable) but under general anaesthesia.
- **Frozen section biopsy** : diagnosed within 20 min while patient is under anesthesia (**if +ve** → Radical mastectomy).
- **Tru-cut biopsy** : under local anesthesia by a special needle which cuts a core of tumor tissue.
Its disadvantages are : **1.** take a false tissue.
2. may disseminate malignancy.

- **Fine Needle Aspiration Cytology (FNAC)** :

- 1. Advantages** : 90% accurate, very simple & inexpensive.
- 2. Disadvantages** : a skilled cytologist is needed.



D. MRI of the breast

- It is a gold standard for women with synthetic implants

E. Detection of distant metastasis

- **Lung** → plain x-ray.
- **Brain** → CT scan & MRI.
- **Liver** → U/S & liver function tests.
- **Bone** → bone scan.

F. Detection of tumor markers

- **CA 15-3** : Cancer Antigen. (prognostic rather than diagnostic)

9- Early detection

This aims at the detection of breast cancer very early in the asymptomatic females

A. Breast Self Examination (BSE)

- All woman over age 20 should be advised to examine their breasts monthly.
- The physician instructs the women as how to conduct a systematic inspection & palpation.
- The woman suspects the presences of a lump, skin dimpling, or nipple retraction .



B. Screening programs

In some Western countries high risk women are subjected to regular clinical examination & mammography. The frequency of examination is every one, two, or three years, depending on the program

10- Treatment

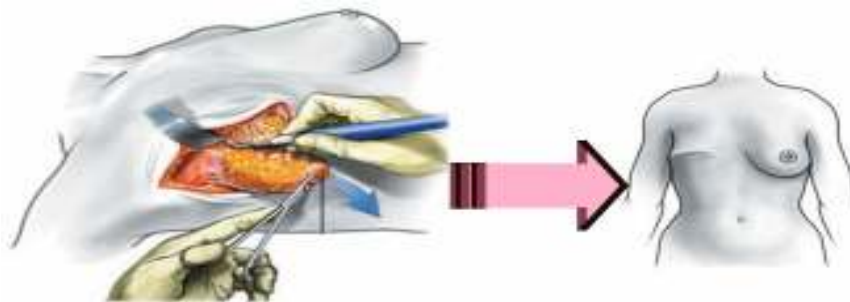
A. Operable (Early) Stage I & II : $\leq T_2, N_1, Mo$

Different surgical options + Adjuvant systemic therapy if +ve Axillary L.Ns

➤ Stage I : Modified Patey's mastectomy + follow up

■ Follow up :

- **Aim to detect** : 1. Local recurrence or metastasis.
2. Any post-operative complications.
- **Time** → after ttt then every 3 months at 1st 2 years
then every 4 months for the next 3 years.
then yearly



➤ Stage II : Modified Patey's mastectomy + adjuvant systemic therapy

■ Radiotherapy : To [↓ local recurrence]

- To** 1. Mediastinal region for internal mammary L.Ns.
2. Supraclavicular region for supraclavicular L.Ns.

■ Chemotherapy : To [↓ late blood born metastasis]

- By** 1. **CMF** : Cyclophosphamid, Methotrexate & 5 Flurouracil
2. Adriamycin.

Indicated with ER -ve female

■ Hormonal : to [↓ growth of tumor]

By Tamoxifen or Progestin

Indicated with ER +ve female.

Idea about

SURGICAL OPERATIONS

1. (QUART) or (W.L.E) operation

A. **QUART** = **Q**uadrentectomy + **A**xillary L.Ns. removal + **R**adiotherapy

B. **W.L.E** = **W**ide **L**ocal **E**xcision with 1 cm safety margin

- It is suitable for :
- ① Small masses < 4 cm
 - ② Big breast
 - ③ Young female
 - ④ Well differentiated tumor
 - ⑤ Carcinoma in situ



QUART



W.L.E

2. Radical mastectomy of (Halsted)

➤ Removal of :

1. Elliptical part of skin with nipple & areola
2. Whole breast tumor
3. 2 Pectoralis muscles.
4. All axillary L.Ns & fat medial to axillary vein

➤ Preservation of

- 1- Axillary vessels
- 2- Cephalic vein
- 3- Nerve to serratus anterior
- 4- Nerve to latissimus dorsi.



Radical Mastectomy

3. Extended radical mastectomy (Not done nowadays)

Same as Halsted + removal of internal mammary L.Ns., through median sternotomy.

4. Modified radical mastectomy of (Patey) (Most widely accepted)

Same as Halsted but

- ① we preserve pectoralis major muscle.
- ② Pectoralis minor either removed or cut at its insertion, or retracted to expose the axilla.

N.B.: 1. Post-operative complications:



[I] HAEMATOMA OR WOUND INFECTION

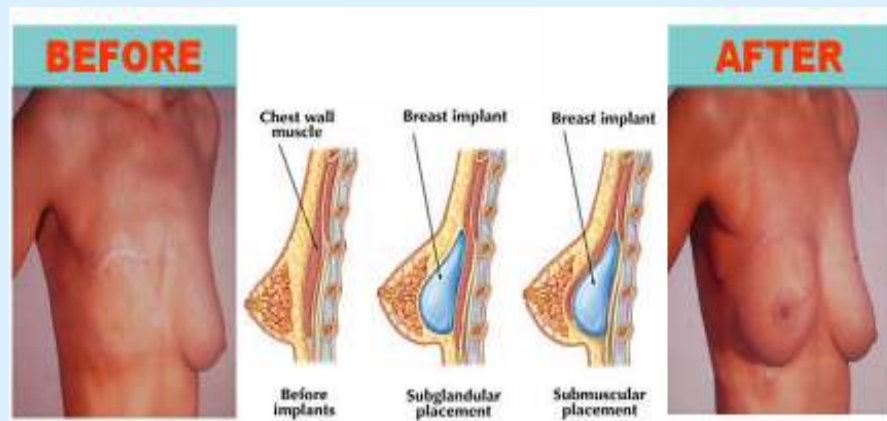
[II] OEDEMA OF UPPER LIMB

- **Early pitting odema:** (within **few days**) due to removal of excess lymphatics,
- **Late non pitting odema** (within **few months**) due to
 1. Recurrence of axillary L.Ns.
 2. Arm infection.
 3. Axillary radiotherapy.

[III] BRIDLE SCAR limitation of abduction.

N.B.: 2. Breast reconstruction :

by **SILICONE PROSTHESIS**



or **MYOCUTANEOUS FLAP**

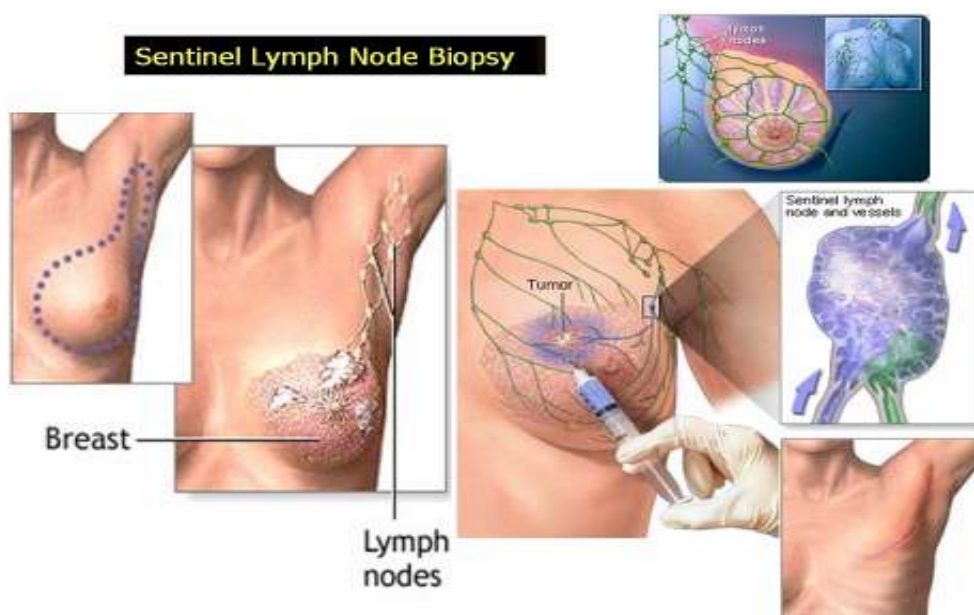
as Rectus abdominis
or Latissimus dorsi flap.



5. Axillary surgery

SENTINEL LYMPH NODE BIOPSY

The **sentinel lymph node** is localized per-operative by injection of a **blue** dye near the tumor. The dye will pass to the 1ry node draining the tumor area, which can be detected by **gamma** camera. then biopsy & histologically examined.



B. Inoperable (Advanced) Stage III & IV : > T₂, N₁, Mo

➤ Stage III :

[1] LOCAL TREATMENT (The main)

- Radiotherapy : To 1. Mediastinum
2. Supraclavicular region
3. Axilla
- Surgical indication [for fungating mass]
through palliative simple mastectomy
(Toilet mastectomy)

[2] SYSTEMIC TREATMENT

- Chemotherapy (CMF & Adriamycin)
 - (6 cycles) for (6 months)
 - Indicated especially : 1. rapidly progressive disease.
2. failure of hormonal treatment.
3. ER -ve female

- Endocrinal treatment :

60 % cancer breast cases have receptors for estrogen so termed (ER +ve) which become :

- **More** active in presence of this hormone
- **Less** active in absence of this hormone

Temporary response for anti-oestrogen after 24-30 months occur especially with post-menopausal female or ER +ve.

➤ Endocrinal treatment as :

- Tamoxifen (Nolvadex) : 1st line of ttt.
- Anastrozole (Aramidex) : 2nd line of ttt
if relapsed after Tamoxifen
- Ovariectomy : as an alternative to get ride of oestrogen source in pre-menopausal female.
- Aminoglutathemide : drug producing suppression.
for adrenal cortex i.e. ↓ oestrogen
(if the patient develops relapse after ovariectomy).

N.B. : Hydrocortisone must be given with Aminoglutathemide.

➤ Stage IV :

[1] LOCAL TREATMENT

- Radiotherapy for any malignant deposits
- Surgical indication
 - Excision of skin nodules.
 - Internal fixation for pathological fracture.

[2] **SYSTEMIC TREATMENT** (The main)

- **Chemotherapy**
(CMF & Adriamycin)
- **Endocrinal treatment :**
(Tamoxifen, Anastrozole.... etc.)

As above

[3] **TREATMENT OF METASTASIS**

- **Liver** metastasis : **C**hemotherapy.
- **Brain** metastasis : **R**adiotherapy
+ Corticosteroids (↓ Intra-cranial tension)
- **Lung** metastasis : **C**hemotherapy.
(**pleural effusion**) chest tube + cytotoxic
bleomycine through it. i.e. **pleurodesis**.
- **Bone** metastasis : **R**adiotherapy
+ Internal fixation if pathological fracture

N.B. : Management of cancer breast during pregnancy :

- **During 1st & 2nd Trimester** : Radical mastectomy
+ termination of pregnancy.
- **During 3rd Trimester** : Radical mastectomy + let
the pregnancy proceed to full term then
radiotherapy is postponed after delivery.



11. Prognosis

1. **Type** of tumor : Paget's & cancer situ are **better than** Mastitis carcinomatosa.
2. **Stages** of tumor : Stage I is **better than** Stage II, III or IV.
3. **Sites** of tumor : Lateral side is **better than** Medial side.
4. **Age** of patient : Old age is **better than** Young [because of sex hormones]
5. **Sex** of patient : Cancer female is **better than** Cancer male.
6. **Hormone receptors** : ER +ve are **better than** ER -ve.
7. **Size, mobility & number of lymph nodes** : involved (pathology)
 - Patients with – ve L.N → 10 years survival = **65%**
 - Patients with **less than 4 +ve nodes** → 10 years survival = **38%**
 - Patients with **more than 4 +ve nodes** → 10 years survival = **13%**

Sarcoma of the breast

- **Incidence** : 0.5 % of malignant breast tumors.
- **Pathology** : De novo
- **C/P** : It grows rapidly & usually fungates through skin.
- **Treatment** : Simple mastectomy + Radiotherapy & chemotherapy.
- **Prognosis** : Very bad.

VI. NIPPLE DISCHARGE

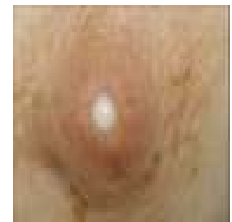
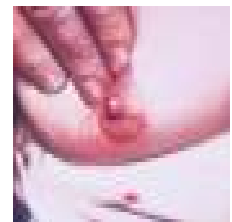
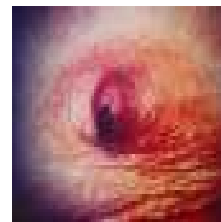
Aetiology

■ Physiological

1. **Milky** discharge : during lactation
2. **Serous** discharge : during pregnancy

■ Pathological

1. **Purulent** discharge : Acute breast abscess
2. **Green paste** discharge : Duct ectasia
3. **Serous, dark, brown or green** discharge : Fibroadenosis
4. **Bloody** discharge :
 - Duct papilloma
 - Duct carcinoma
5. **Necrotic crystals** : Degeneration carcinoma
6. **Milky** discharge :
 - Galactoceles
 - Contraceptive pills
 - Hyper-prolactinaemia



Diagnosis

■ History

■ General Examination

■ Local Examination

- especially for
 1. Nature & side of discharge.
 2. Associated mass
 3. Age of patient
 4. Use of contraceptive pills
 5. Use of drugs as prolactin

Investigations

- **Soft tissue mammography**
- **Ductography** : **Lipidol** injection shows filling defect if mass is present
- **Biopsy & Cytology** for mass
- **Serum prolactin level**
- **Tests for occult blood in discharge** through [**Benzedrine test**]



Treatment

- **If Mass is associated**
 - Excision & biopsy
- **If No Mass is associated**
 - Localized ducts : **Microdochectomy**
 - Many ducts (rare) : **Cone excision** of major ducts.

VII. BREAST MASSES

(1) Breast cysts

Aetiology

(A) **Stroma** [inter-acinar cysts]

- **Traumatic** : Blood cyst.
- **Inflammatory** : Cold abscess (T.B) or acute abscess.
- **Neoplastic** : Degeneration carcinoma.
- **Parasitic** : Hydatid cyst.
- **Miscellaneous** : Skin cyst e.g. sebaceous cyst, lymphatic cystetc.

(B) **Duct** [Acinar cysts]

- **Fibrocystic disease** : e.g. Cyst of blood-good
- **Retention cyst** : e.g. Duct papilloma
- **Galactocele** :
 - retention cyst blocked by (Inspissated milk)
 - sometimes shows **Milky discharge**
 - it affect lactating female.

Treatment

(A) Aspiration + Cytology

- (B) **Excision** If :
1. Rapid refilling after aspiration
 2. Residual mass after aspiration
 3. **Bloody** aspirate

(2) Solid swellings

[A] **Hard** masses :

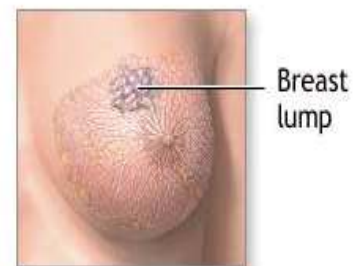
1. Traumatic disease.
2. Chronic breast abscess.
3. Mammary duct ectasia.
4. Hard fibroadenoma.
5. Cancer breast (Scirrhus & Atrophic scirrhus)

[B] **Soft** masses :

1. Soft fibroadenoma.
2. Cystosarcoma phylloids.
3. Cancer breast (Encephaloid & Mucinous)

[C] **Firm** mass :

1. Fibroadenosis.
2. Hard fibroadenoma.



N.B.: Causes of huge breast

- | | |
|-----------------------------------|-----------------------|
| 1. Diffuse hypertrophy of breast. | 2. Soft fibroadenoma. |
| 3. Cystosarcoma phylloids. | 4. Sarcoma. |

DISEASES OF MALE BREAST

(1) Gynaecomastia

Definition

generalized enlargement of the glandular element of the male breast.

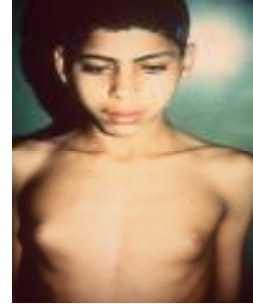
Aetiology

■ Physiological

- **Infantile** : from maternal sex hormones.
- **Pubertal** : resolves within 2 years when adult testosterone level is reached
- **Senile Gynaecomastia** :
from ↓ testicular functions with age.

■ Pathological 2ry to ↗

- ↓ **Testosterone** : e.g. Orchidectomy.
- ↑ **Oestrogen** : e.g. Supra-renal tumor.
- ↓ **Metabolism of Oestrogen** : e.g. Liver cell failure.
- **Ectopic Hormones** : e.g. Bronchial carcinoma.
- **Drugs**: e.g. Digitalis, Cimitidin, Aldactone



Clinical picture

- **Symptoms** : unilateral or bilateral, tender mass (i.e. like a **disc**).
- **Sign** : Enlargement of the male breast with prominent nipple due to hypertrophy of the glandular tissue. .

Investigations

- Hormonal profile & liver function tests .
- **Biopsy** if doubt of cancer.

Treatment

- **Medical (mainly)** : 1. **Physiological** : Reassurance.
2. **Pathological** : Treatment of the cause.
- **Surgical** : If persists → **S.C. mastectomy**.

(2) Carcinoma of male breast

Incidence

Male : Female = 1 : 100 (**1%** of all cancer breast)

Staging

Treatment

} **Similar to cancer female breast** but
castration is the main hormonal treatment

Prognosis

Worse than cancer female due to early spread to chest wall (**no** breast fat)

